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Adenovirus containing a deletion of the early region 2A gene allows growth of adeno-associated virus with decreased efficiency.

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Efficient growth of adeno-associated virus (AAV) requires helper functions provided by a coinfecting adenovirus or herpesvirus. Earlier studies using adenoviruses having temperature-sensitive lesions in the early region 2A gene (E2A) produced contradictory evidence regarding the role of the E2A 72-kDa DNA-binding protein (DBP) in allowing efficient AAV growth. These disparate results may reflect varying levels of residual function in the temperature-sensitive DBP. We examined this issue using an adenovirus type 5 mutant (Add/802) that fails to produce any detectable DBP or any fragment of it. Our experiments show that AAV can carry out a full growth cycle in the complete absence of DBP. However, AAV DNA replication and rep and capsid protein synthesis were reduced several fold and the yield of infectious AAV was reduced by an order of magnitude. This appears to reflect mainly decreased post-transcriptional expression of AAV rep and capsid protein genes.

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